TEAM 12

DIY PROJECT REPORT

LINE FOLLOWER ROBOT

TEAM 12

ADITYA KUMAR TIWARY

AYAN AHMED

RITIK JHA

HARSHAL YUVRAJ

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COMPANY NAME

PROF: DR. KORAK SARKAR

Logo Name

ABSTARCT

- This simple bot is designed to be able to follow a black line on the ground without getting off the line too much. The bot has two sensors installed underneath the front part of the body, and two DC motors drive wheels moving forward. A circuit inside takes an input signal from two **sensors** and controls the speed of wheels' rotation. The control is done in such a way that when a sensor senses a black line, the motor slows down or even stops. Then the difference of rotation speed makes it possible to make turns. For instance, in the figure on the right, if the sensor somehow senses a black line, the wheel on that side slows down and the bot will make a right turn.

1.INTRODUCTION

- This simple bot is designed to be able to follow a black line on the ground without getting off the line too much. The bot has two sensors installed underneath the front part of the body, and two DC motors drive wheels moving forward. A circuit inside takes an input signal from two **sensors** and controls the speed of wheels' rotation. The control is done in such a way that when a sensor senses a black line, the motor slows down or even stops. Then the difference of rotation speed makes it possible to make turns. For instance, in the figure on the right, if the sensor somehow senses a black line, the wheel on that side slows down and the bot will make a right turn.

➢ 2. OBJECTIVE

1) The Line Follower Robot is a basic robot that follows a specific path indicated by a line (usually a black line on a light colored surface) having some particular width.
2) Industrial automated equipment carriers.
3) Entertainment and small household applications.
4) Second wave robotic reconnaissance operations.
5) Automated cars.

3. COMPONENTS

3.1 ARDUINO UNO:- The **Arduino Uno** is an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc. The board is equipped with sets of digital

and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits.[1] The board has 14 digital I/O pins (six capable of PWM output), 6 analog I/O pins, and is programmable with the Arduino IDE (Integrated Development Environment), via a type B USB cable.

3.2 DC MOTOR

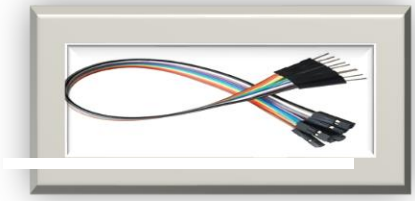
A **DC motor** is any of a class of rotary electrical motors that converts direct current (DC) electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current in part of the motor.

3.3 BATTERY

An electric battery is a source of electric power consisting of one or more electrochemical cells with external connections for powering electrical devices. When a battery is supplying power, its positive terminal is the cathode and its negative terminal is the anode.

3.4 JUMPER WIRE

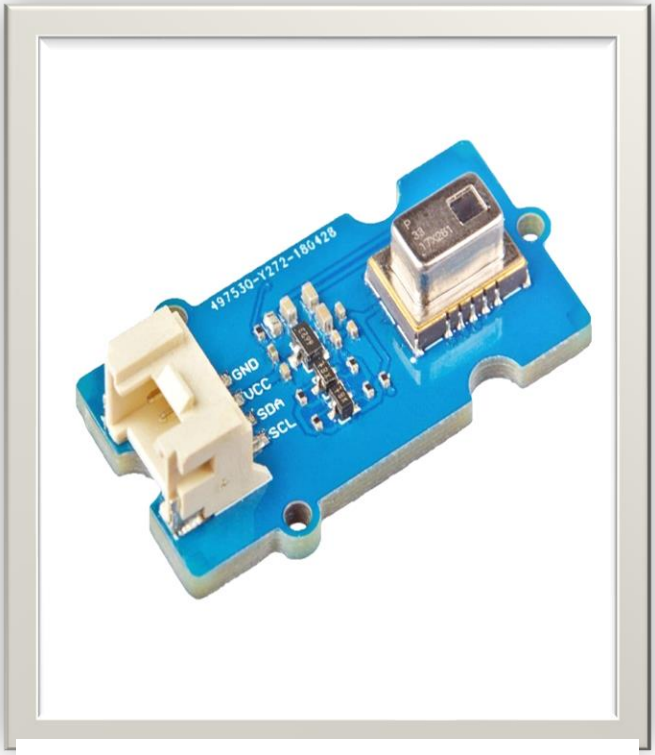
A **jump wire** (also known as **jumper**, **jumper wire**, **DuPont wire**) is an electrical wire, or group of them in a cable, with a connector or pin at each end (or sometimes without them – simply "tinned"), which is normally used to interconnect the components of a breadboard or other prototype or test circuit, internally or with other equipment or components, without soldering



3.4 IR SENSOR

An infrared sensor (IR sensor) is **a radiation-sensitive optoelectronic component with a spectral sensitivity in the infrared wavelength range 780 nm** … 50 µm. IR sensors are now widely used in motion detectors, which are used in building services to switch on lamps or in alarm systems to detect unwelcome guests.

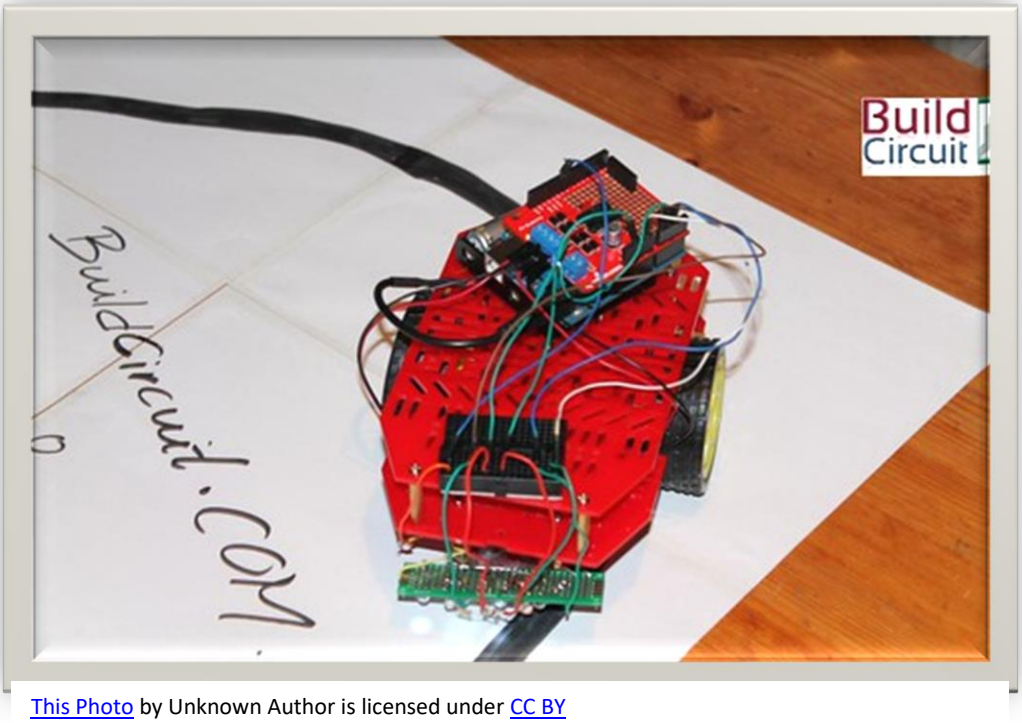
Infrared sensors work **on the principle of reflected light waves**. Infrared light reflected from objects or sent from an infrared remote or beacon. Infrared sensors are also used to measure distance or proximity. The reflected light is detected and then an estimate of distance is calculated between sensor and



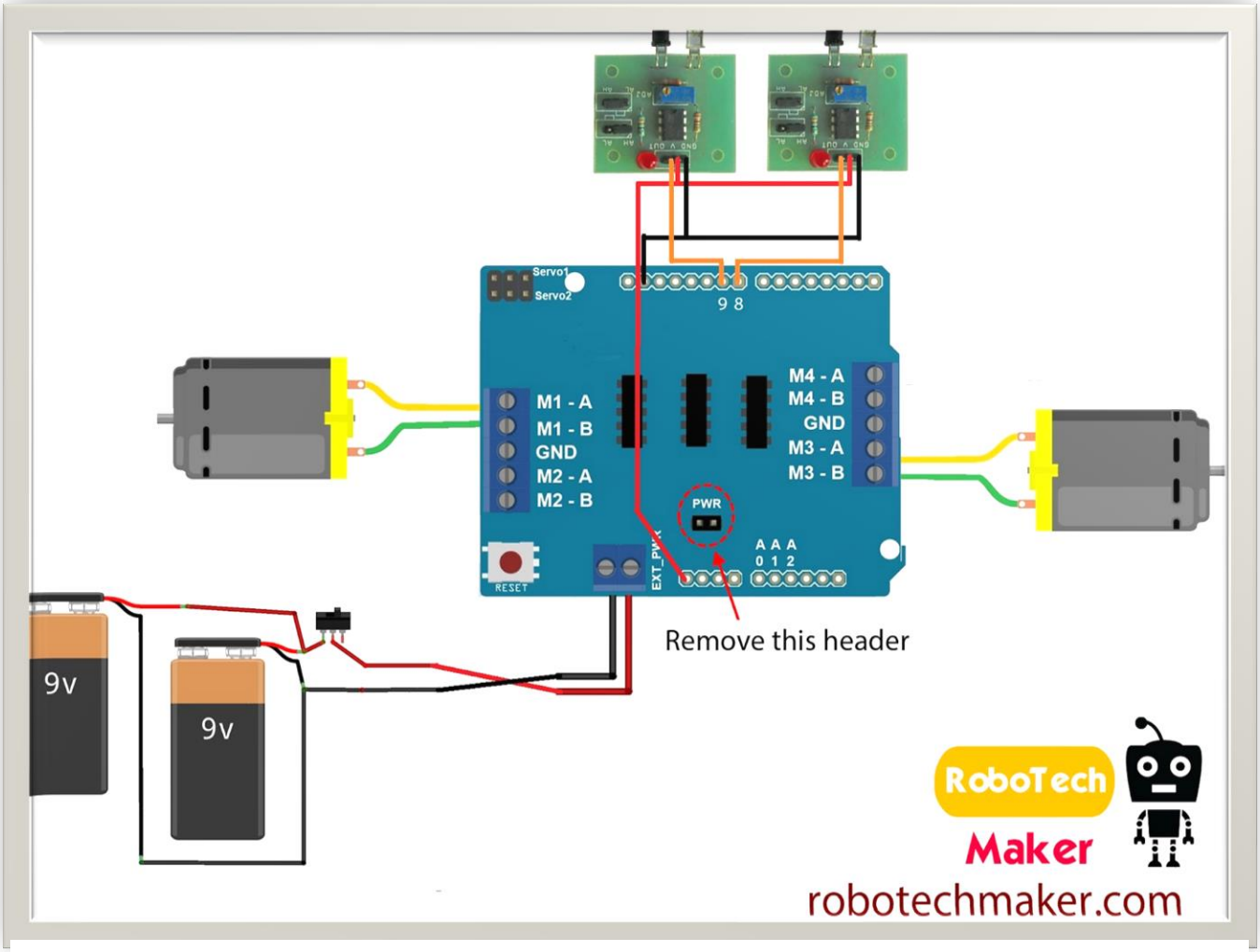
object.

WORKING OF ROBOT

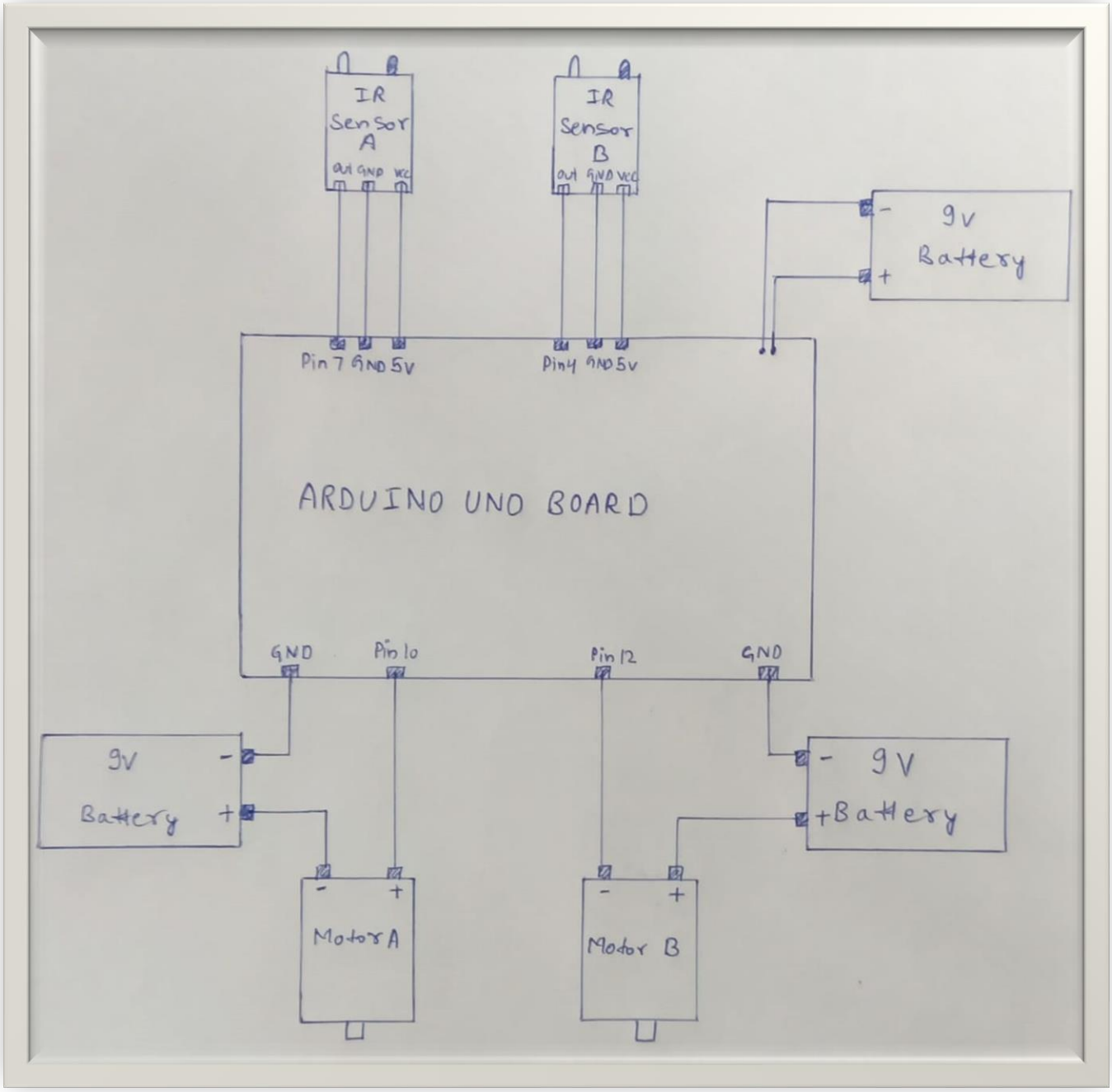
- This simple bot is designed to be able to follow a black line on the ground without getting off the line too much. The bot has two sensors installed underneath the front part of the body, and two DC motors drive wheels moving forward. A circuit inside takes an input signal from two **sensors** and controls the speed of wheels' rotation. The control is done in such a way that when a sensor senses a black line, the motor slows down or even stops. Then the difference of rotation speed makes it possible to make turns. For instance, in the figure on the right, if the sensor somehow senses a black line, the wheel on that side slows down and the bot will make a right turn.



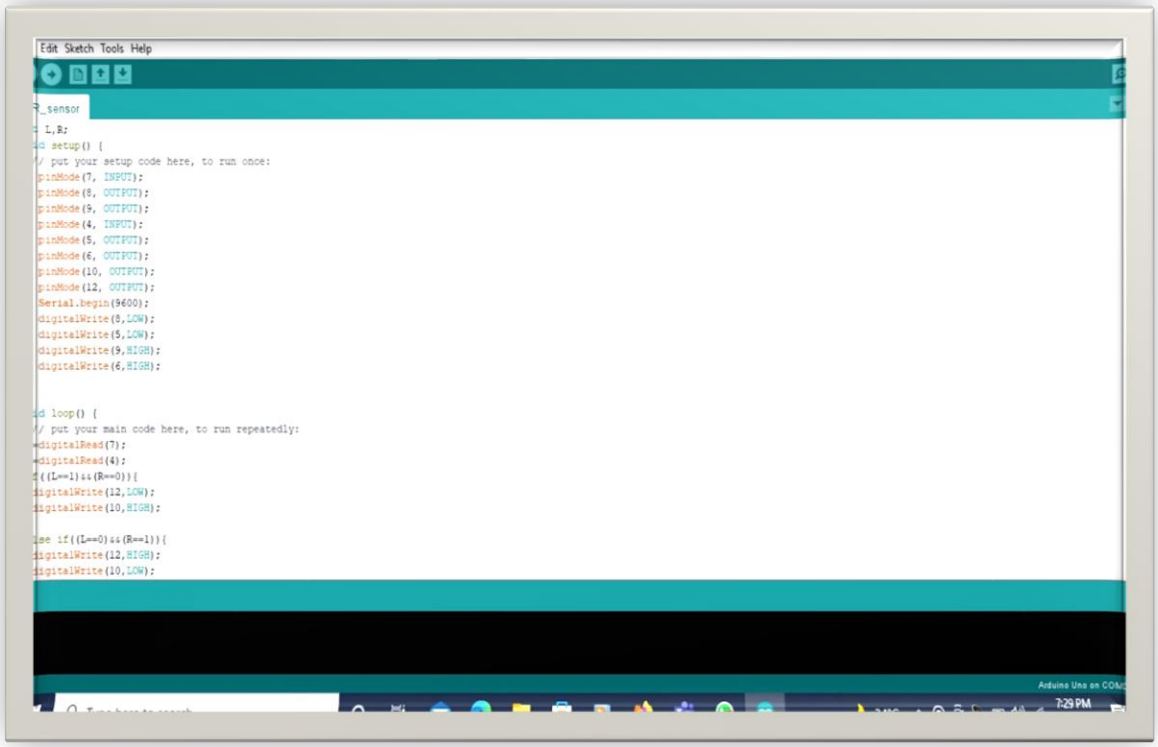
4. TINKER CAD MODEL



5.CIRCUIT DIAGRAM



6.CODE


Edit Sketch Tools Help
R_sensor
int L,R;
void setup() {
// put your setup code here, to run once:
pinMode(7, INPUT);
pinMode(8, OUTPUT);
pinMode(9, OUTPUT);
pinMode(4, INPUT);
pinMode(5, OUTPUT);
pinMode(6, OUTPUT);
pinMode(10, OUTPUT);
pinMode(12, OUTPUT);
Serial.begin(9600);
digitalWrite(8,LOW);
digitalWrite(5,LOW);
digitalWrite(9,HIGH);
digitalWrite(6,HIGH);
void loop() {
// put your main code here, to run repeatedly:
digitalRead(7);
digitalRead(4);
if((L==1)&&(R==0)){
digitalWrite(12,LOW);
digitalWrite(10,HIGH);
else if((L==0)&&(R==1)){
digitalWrite(12,HIGH);
digitalWrite(10,LOW);
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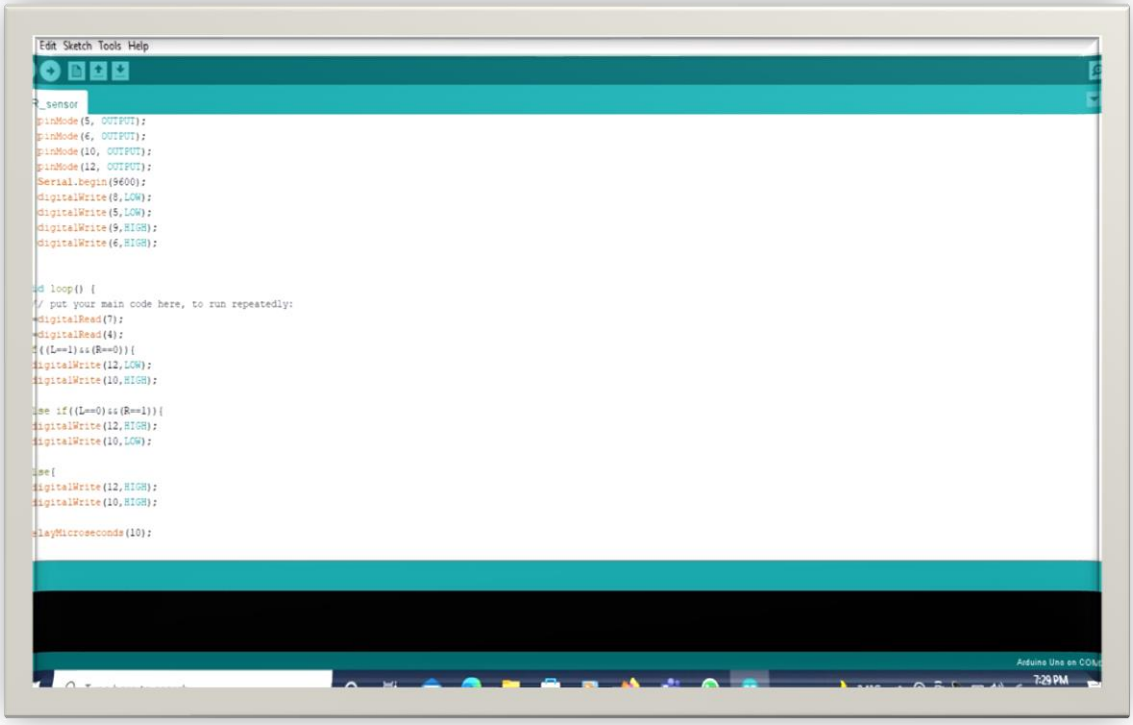
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R_sensor
pinMode(5, OUTPUT);
pinMode(6, OUTPUT);
pinMode(10, OUTPUT);
pinMode(12, OUTPUT);
Serial.begin(9600);
digitalWrite(8,LOW);
digitalWrite(5,LOW);
digitalWrite(9,HIGH);
digitalWrite(6,HIGH);
void loop() {
// put your main code here, to run repeatedly:
digitalRead(7);
digitalRead(4);
if((L==1)&&(R==0)){
digitalWrite(12,LOW);
digitalWrite(10,HIGH);
else if((L==0)&&(R==1)){
digitalWrite(12,HIGH);
digitalWrite(10,LOW);
else{
digitalWrite(12,HIGH);
digitalWrite(10,HIGH);
delayMicroseconds(10);
7:29 PM

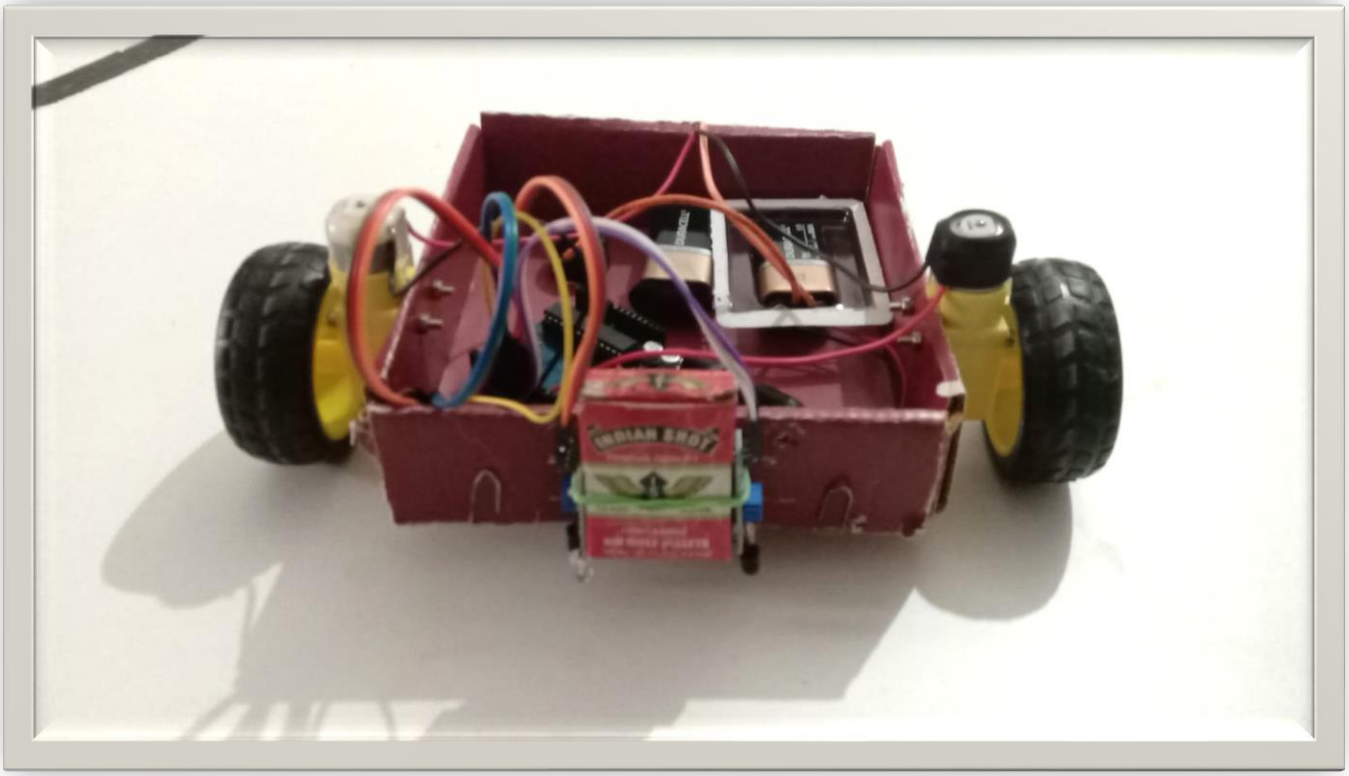
```
int L,R;
void setup() {
  // put your setup code here, to run once:
   pinMode(7, INPUT);
   pinMode(8, OUTPUT);
   pinMode(9, OUTPUT);
   pinMode(4, INPUT);
   pinMode(5, OUTPUT);
   pinMode(6, OUTPUT);
   pinMode(10, OUTPUT);
   pinMode(12, OUTPUT);
   Serial.begin(9600);
   digitalWrite(8,LOW);
   digitalWrite(5,LOW);
   digitalWrite(9,HIGH);
   digitalWrite(6,HIGH);
}

void loop() {
  // put your main code here, to run repeatedly:
 L=digitalRead(7);
 R=digitalRead(4);
 if((L==1)&&(R==0)){
  digitalWrite(12,LOW);
  digitalWrite(10,HIGH);
 }
 else if((L==0)&&(R==1)){
  digitalWrite(12,HIGH);
  digitalWrite(10,LOW);
 }
  else{
    digitalWrite(12,LOW);
    digitalWrite(10,LOW);
} delayMicroseconds(10):}
```

7.CHALLENGES FACED

1) Main challenges that we faced in our project was due to having wrong alignment of infraray sensor as our robo was not working due to not getting power but these challenges was overcomed by perpendiculary aligning the two infraray sensor.

2) ASSEMBLY OF OUR MODEL COPY IS DONE AND IT IS NOT WORKING BECAUSE IT COULD SUSTAIN THE LOAD THIS COULD OVERCOME BY USING MOTOR DRIVER WHICH WE HAVE NOT GET YET.



YOUTUBE VIDEO LINK :-

https://youtu.be/_kzAY48_euo

THANK YOU